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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/986,665	11/09/2001	Michael S. Hagedorn	11050.0023	5790

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Washington, DC 20036

EXAMINER
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MATTIS, JASON E

ART UNIT	PAPER NUMBER
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2665

DATE MAILED: 08/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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<b>Office Action Summary</b>	<b>Application No.</b> 09/986,665	<b>Applicant(s)</b> HAGEDORN, MICHAEL S.	
	<b>Examiner</b> Jason E. Mattis	<b>Art Unit</b> 2665	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 06 June 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

1. This Office Action is in response to the Response to Restriction Requirement filed on 6/6/05. Group I consisting of claims 1-14 was elected. Claims 1-14 are currently pending in the application.

### ***Claim Objections***

2. Claims 1, 5, and 8 are objected to because of the following informalities:

Lines 10-11 in claim 1 on page 10 of the claims states, "said first and second outputs"; however, there is no prior mention of "a first and second output". It is recommended that the word "said" be removed. It is further recommended that language be added to the claim to make it clear that the outputs discussed in these lines are the outputs of the switch, not the outputs of either the mutex gates, which are also discussed in the claim.

Line 4 in claim 5 on page 11 of the claims states, "said first multi-rail input"; however, there is no prior mention of "a first multi-rail input". There is a prior mention of a "first... multi-rail control path". It is recommended that "said first multi-rail input" be amended to be more consistent with prior claim language.

Claim 8 contains reference to variable "n" and "j"; however there is no specific definition of these variable in the claim. It is recommended that a specific definition of what is meant by variables "n" and "j" be added to the claim.

Multiple claims include use of the term "capable of". It is recommended that this term be deleted from the claims since "capable of" does not provide a positive limitation on the claims.

Appropriate correction is required.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-5, 7-8, and 10-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Molnar et al. (U.S. Pat. 5713025) in view of Newman (U.S. Pat. 4965788).

**With respect to claim 1**, Molnar et al. discloses a arbiter granting access to a shared resource that includes first and second multi-rail control paths **(See column 9 lines 11-25, Table VI, and Figure 4 of Molnar et al. for reference to arbiter circuit 600 including multi-rail control paths R1/G1 and R2/G2)**. Molnar et al. also discloses first and second mutex gates with the first and second multi-rail control paths being cross-connected into the first and second gates **(See column 9 lines 26-36, Table VII, and Figure 4 of Molnar et al. for reference to the multi-rail control paths**

**R1/G1 and R2/G2 being cross-connected through XOR gates 610 through 616 and input to mutex elements 30<sub>5</sub> and 30<sub>6</sub>).** Although Molnar et al. discloses that the arbiter is used to arbitrate between the access of a shared resource (**See column 1 lines 44-62 and Figure 1 of Molnar et al.**), Molnar et al. does not disclose that the shared resource is an output port of a switch. Molnar et al. also does not specifically disclose outputting arbiter results to first and second demultiplexers, which also receive first and second data paths as an input. Molnar et al. further does not disclose routing data to one of first and second outputs based on a state of the output of the arbiter.

**With respect to claim 8,** Molnar et al. discloses a structure, as described in the rejection to claim 1 above, using  $n=2$  outputs.

**With respect to claim 2,** Molnar et al. does not disclose simultaneously routing data to from first and second inputs to different outputs without collision.

**With respect to claim 5,** Molnar et al. does not disclose a data stream including information and a routing address and an extractor extracting the routing address.

**With respect to claims 10 and 11,** Molnar et al. does not disclose an extractor having a data stream input and routing address and information outputs with the extractor separating information and a routing address from the incoming data stream.

**With respect to claim 13,** Molnar et al. does not disclose a first second third and fourth switches with the outputs of the switches being cross connected together.

**With respect to claims 1-2, 5, 8, 10-11, and 13,** Newman, in the field of communications, discloses a switch that uses an arbiter to determine which of two inputs are connected to which of two outputs (**See column 5 lines 41-54 and Figure 5**

**of Newman for reference to the switching element in Figure 5 that uses an arbiter 30).** Newman also discloses that the outputs of the arbiter and first and second data paths are input to a demultiplexer **(See column 5 lines 41-54 and Figure 5 of Newman for reference to input data 1 and 2 as well as the output of the arbiter 30 being input to switch 31, which acts as a demultiplexer).** Newman further discloses routing data to the outputs based on the output of the arbiter with data being able to be routed to both outputs simultaneously without collision **(See column 5 lines 41-54 and Figure 5 of Newman for reference to outputting data to either output 1 or output 2 or both based on the decisions of the arbiter 30).** Newman also discloses a data stream including information and a routing address and an extractor extracting the routing address **(See column 5 lines 41-54 and Figure 5 of Newman for reference to input processors 28 that extract routing information from an input and feed the routing information to the arbiter).** Newman further discloses cross-connecting multiple switches to form a larger switch **(See column 5 line 55 to column 6 line 2 and Figure 6 of Newman for reference to cross-connecting multiple switching elements to form a larger switching element).** Using a switch as disclosed by Newman has the advantage of allowing an arbiter to control the switching of data from inputs to outputs in a non-blocking manner while mediating between multiple requests to access a common output.

It would have been obvious for one of ordinary skill in the art at the time of the invention, when presented with the work of Newman, to combine the switch of Newman with the arbiter of Molnar et al. with the motivation being to allow an arbiter to control the

switching of data from inputs to outputs in a non-blocking manner while mediating between multiple requests to access a common output.

**With respect to claims 3 and 4**, Molnar et al. discloses that if simultaneous request signals are received for a common output, that data on one of the first and second signal paths randomly passes to the output before data on the other path with the data associated with the first to arrive request being routed before the data of the second to arrive request **(See column 2 lines 44-60 for reference to the operation of a MUTEX allowing only one input to be selected if two request are received at the same time with the first request sent being the first to be selected)**.

**With respect to claims 7 and 12**, Molnar et al. discloses a downstream circuit generating an acknowledge signal responsive to a process being completed with the state of the control data remaining unchanged until the acknowledgement signal is received **(See column 1 lines 44-62, column 9 lines 37-48, Table VIII, and Figures 1 and 4 of Molnar et al. for reference to a done signal D, which acts as an acknowledge signal response to the completion of a process with the control data remaining the same until the signal D is received)**.

**With respect to claim 14**, Molnar et al. discloses that the switch does not receive a clocked signal **(See column 1 lines 16-23 of Molnar et al. for reference to the arbiter being asynchronous, meaning no clock signal is used)**.

5. Claims 6 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Molnar et al. in view of Newman as applied to claims 1-5, 7-8, and 10-14 above, and further in view of the Applicant's admitted prior art.

**With respect to claims 6 and 9**, the combination of Molnar et al. and Newman does not disclose that the data paths are multi-rail paths.

**With respect to claims 6 and 9**, Applicant's admitted prior art discloses using multi-rail data paths **(See page 1 line 28 to page 2 line 21 of the Applicant's Background of the Invention section for reference to using multi-rail data paths)**. Using multi-rail data paths has the advantage of providing more flexibility in the control of the data paths since multiple signal lines correspond to each data path.

It would have been obvious for one of ordinary skill in the art at the time of the invention, when presented with the work of the Applicant's admitted prior art, to combine the switch of Molnar et al. and Newman with the Applicant's admitted prior art, with the motivation being to provide more flexibility in the control of the data paths since multiple signal lines correspond to each data path.

### ***Conclusion***

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Molnar et al. (U.S. Pat. 5875339) discloses another asynchronous arbiter. Molnar et al. (U.S. Pat. 6675246) discloses a further arbiter.



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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason E. Mattis whose telephone number is (571) 272-3154. The examiner can normally be reached on M-F 8AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu can be reached on (571) 272-3155. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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